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May 6, 2002

Ms. Kristy Chew
Siting Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

RE: Data Responses, Set 1I
Cosumnes Power Plant (01-AFC-19)

On behalf of the Sacramento Municipal Utility District, please find attached 12 copies and one original of Data Responses, Set 1I, in response to Staff's Data Requests dated December 10, 2001.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Principal Project Manager

c: Colin Taylor/SMUD
Kevin Hudson/SMUD
Steve Cohn/SMUD

COSUMNES POWER PLANT (01-AFC-19)

DATA RESPONSE, SET 1I

(Response to Data Request: 22)

Submitted by

SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD)

May 6, 2002

2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

Technical Area: Biological Resources
CEC Authors: Melinda Dorin and Rick York
CPP Author: EJ Koford

BACKGROUND

BACKGROUND

Table 8.2-4 summarizes the permanent and temporary project impacts to biological resources at the site. On AFC page 8.2-14 it states that the proposed 20-acre construction laydown area on the south side of Clay Station East Road has not been evaluated for the potential presence of vernal pools and special-status species. In the AFC the proposed construction laydown area is considered to have a temporary impact.

DATA REQUESTS

22. Provide a draft of the laydown area restoration and revegetation plan.

    Response: A draft restoration and revegetation plan for the construction laydown area is provided as Attachment BR-22.

Attachment BR-22
Draft

Cosumnes Power Plant Laydown Area Restoration and Revegetation Plan

Prepared for

SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD)

May 6, 2002

Prepared by

2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

SECTION 1

Background

The laydown area restoration and revegetation plan will be implemented following completion of the Cosumnes Power Plant (CPP) site and linear facilities and will focus on restoring and enhancing the original site conditions. The plan includes restoration of original topography and hydrology. Revegetation efforts will include seeding the area for erosion control and encouraging the establishment of native vegetation. This plan addresses the restoration and revegetation concerns and preventative actions to be implemented. Specific measures will be finalized during post-construction planning and modified as needed following construction to ensure the best level of protection in sensitive areas. In addition, details of the plan will be developed (prior to the initiation of construction) by contractors involved in project construction. Other activities associated with the construction and operation of the CPP facility and the associated linears (water, wastewater, and natural gas lines) are not included in this plan.

1.1 Site Conditions

The proposed power plant site is located in Sacramento County, on the eastern edge of the Sacramento Valley, approximately 25 miles southeast of the City of Sacramento (see Figure BR22-1, all figures are at the end of the section). The proposed plant would be located on a 30-acre parcel on the north side of Clay East Road, approximately 1,500 feet south of the existing non-operational Rancho Seco Plant (RSP) on a portion of a 2,480-acre site owned by the Sacramento Municipal Utility District (SMUD). The proximity to RSP will allow the reuse of existing water systems, switchyards, and transmission lines. The project is at approximately 150 feet elevation, at the base of the foothills that rise to the Sierra Nevada east of the project. The site is located on the United States Geological Survey Goose Creek quadrangle.

The proposed 20-acre laydown area is located directly south of the proposed power plant site, on the south side of Clay East Road (see Figure BR22-2).

The current topography of the laydown area has a northern aspect sloping gently towards Clay East Road. The area includes two swales on the east and west boundaries. These drainages transect the site from south to north and pass through culverts under Clay East Road where they connect with the swales that cross the CPP site. The proposed site also includes one vernal pool, along the eastern boundary.

The proposed laydown area is characterized by non-native annual grass such as Medusa-head (*Taentherum caput-medusa*), soft chess (*Bromus hordeaceus*), and foxtail fescue (*Vulpia bromoides*). The site also includes common annual forbs such as filaree (*Erodium botrys*; *E. cicutarium*), curly dock (*Rumex crispus*), lupine (*Lupinus* sp.) and clover (*Trifolium* sp.).

The proposed laydown area is adjacent to similar open annual grasslands with varying degrees of ephemeral wetland hydrology. The area is subjected to cattle grazing activities.

Use of the laydown area will be temporary for the duration of construction. Surface preparation of the area will include grading to a slope that allows adequate use and drainage of the site as an equipment storage and staging location. Preparation will require the diversion of the two swales transecting the area from north to south. These drainages will be diverted along the east and west boundaries of the area and will link with the swales that will also be diverted around the CPP site, north of Clay East Road (see Figure BR22-2). The constructed grade will include a slope encouraging runoff to drain to the east and west diversions. These swale diversions will likely be permanent following construction to provide contiguous hydrology with the realigned swales at the CPP site. Preparation of the site will also require the filling of one vernal pool (see Figure BR22-3).

Following construction the site will be recontoured to approximate original topographic characters. Due to the permanent diversion of the contiguous swales at the CPP site downstream of the laydown area, it will not be feasible to restore the original orientation of the two swales. The drainages will either remain in the diverted routes or be redirected in an alternative alignment.

1.2 Site Erosion Issues

The proposed laydown area is characterized by features prone to erosion. As the slope inclination increases, the intensity of erosion increases proportionally. In addition, as vegetative or engineered cover decreases the amount of erosion increases proportionally. The following defines two types of erosion forces that could potentially impact the project area.

- *Surface erosion* is the particle-by-particle removal of soil and rock fragments from the ground surface, usually by water, wind, or ice.
- *Mass wasting* is the downslope movement of soil/rock materials as more or less cohesive masses.

Erosion occurs when a number of key elements combine and reach a critical threshold level. The process initiated is dependent on the combination of site and climatic characteristics. The erosion intensity at any given work area will depend on the site characteristics and climatic conditions.

Surface erosion is the primary issue to be addressed at the proposed laydown area.

1.2.1 Surface Erosion

Surface runoff will likely be the primary agent of erosion during preparation and use of the laydown area. Sheet and rill erosion will likely be the predominant type of surface erosion. Gullying generally occurs on unprotected slopes. Wind-driven erosion may occur in sparsely vegetated or non-vegetated areas. This type of erosion primarily depends on wind velocity and soil moisture content.

1.2.2 Mass Wasting

Debris flows consist of various combinations of soil, rock, water, and vegetation that flow rapidly downslope in a viscous state. These usually occur on steep slopes where they pick

up speed and additional materials as they flow into flat areas or stream channels. They typically occur during or after intense, prolonged rainstorms when soils become oversaturated.

Landslides move slower than debris flows and they may occur in areas of gentle slopes. Landslides are caused by the removal of downslope support beneath a mass of material and high ground water or soil moisture levels. The CPP laydown area is located in an area of low rolling hills in the Sacramento Valley where ground water is generally unconfined and occurs at depths ranging from near surface to 40 feet below grade. Therefore, landslides are not expected to be a significant concern at the site.

SECTION 2

Hydrology

The Sacramento Valley area typically receives its most significant precipitation between November and April. January is typically the wettest month, with an average precipitation of 3.40 inches. The total annual average rainfall is 18 inches. Summers are dry (June typically being the driest month) with an average precipitation of 0.18 inches. The laydown area preparation is scheduled for the summer months when the ephemeral swales are likely to be dry and surface runoff will be minimal. Use of the area will be approximately 4 years. Erosion control measures will be in place throughout construction, clean up, and restoration activities, and until the Notice of Termination is filed.

SECTION 3

Methodology

3.1 Site Preparation

3.1.1 General Conditions

The CPP Stormwater Pollution Prevention Plan includes conditions relevant to the preparation and use of the temporary laydown area. These conditions are designed to prevent contaminants derived from preparation activities from entering local swales, storm drains, and other sensitive areas. With erosion control devises in place, only minor sediment discharge is anticipated to be present in the laydown area storm water runoff. Although topographical features will be restored, the preparation of the temporary laydown area will permanently alter surface drainage patterns in the project area. During and following site preparation, the laydown area will be characterized by increased areas of compact soils, impervious surfaces, and graded slopes. These alterations will result in increase surface runoff. Topsoil will be removed and stockpiled. The site will then be graded and compacted as needed. As necessary, a layer of geo-textile fabric will be laid down beneath the gravel bed in the area where rolling stock will be housed.. The gravel will provide erosion control. The fabric liner will aid in reducing the possible hazards of hydrocarbon contamination from vehicles and other petroleum-based-fuel equipment. The laydown area will be designed to direct runoff toward one of the diverted swales. Temporary erosion control measures will be used to control the flow of runoff exiting the site.

3.1.1.1 Waste Materials

The storage and handling of toxic materials during construction is addressed in the hazardous materials section of the Application for Certification (AFC) submitted to the California Energy Commission (01-AFC-19), and specifically in the Construction SWPPP (see Attachment W&SR-244, Data Response Set 3B). Construction-related debris will be stored and disposed of in an appropriate manner. Small trash items and miscellaneous debris will be placed into storage bins for periodic disposal. Salvageable wastes will be stored onsite in a manner that prevents contamination of the stormwater runoff and will be removed periodically.

3.1.1.2 Construction Equipment

Construction equipment will not be stored in areas where storm water might pool and percolate to groundwater. Equipment loading and unloading will be done in a manner to minimize alteration of natural drainage patterns. Constructed access and egress areas will be installed and will be graded or protected to stabilize soils and minimize erosion due to equipment travel.

Equipment storage, cleaning, fueling, and maintenance activities will include measures to prevent the discharge of contaminants. These activities will be limited to approved areas where erosion control devises are in place and containment materials are available. If

necessary, absorbent pads or drip pans will be used to contain equipment leaks. In addition, refueling of vehicles shall be prohibited within 100 feet of a hydrologic feature. All spills will be cleaned up immediately. Major equipment cleaning and maintenance shall not be conducted in any area where runoff could enter a local drainage.

Vehicular or equipment access will not be allowed within the swales following diversion.

3.1.2 Erosion Control Measures

A variety of erosion control measures will be used to minimize erosion during site preparation and utilization. These measures include revegetation, slope protection, soil moisture control, and temporary and permanent runoff control structures. The site will be recontoured and revegetated to provide erosion control following use. Biotechnical slope protection systems (vegetated gabions, etc.) are effective and may be use whenever possible. Details of the plan will be developed (prior to the initiation of construction) by the contractors involved in the preparation of the laydown area.

3.1.2.1 Surface Runoff Control

The following sections outline measures to avoid and minimize erosion from surface water runoff.

3.1.2.1.1 Temporary Erosion Control Measures

Temporary control measures will be used to re-direct surface runoff, decrease the velocity of surface runoff, capture suspended sediment, and stabilize exposed soil. These measures include, but are not limited to, the use of straw bales, sandbags, and silt fences. These erosion control measures will be used along the perimeters of the laydown area (Figure BR22-2) and wherever else appropriate to prevent sediment runoff and debris from entering drainages. The majority of laydown area preparation is expected to take place during the dry summer months. Therefore, the use of temporary control measures will primarily be used during the use of the laydown area.

The surface flow will be discharged into the diverted swale after passing through straw wattles, straw dikes, or other measures. The surface gravel cover will also aid in controlling the runoff.

A diverted swale will be similar in character to the existing swale. It should be able to accommodate the expected runoff. Any runoff entering the swale will be directed northward through a system of diverted and natural hydrologic features. The diverted swale will be vegetated following its construction and appropriate erosion control measures will be employed until the vegetation becomes established, which may include the use of coir blankets. Energy dissipation structures may be required to prevent erosion of the swale banks.

Wind-driven soil erosion is likely to be more prevalent during preparation. Abatement measures will be taken wherever necessary to limit the production of dust from wind erosion in amounts damaging to property, cultivated vegetation, intolerable to persons living or traveling in the vicinity. Dust abatement will not likely be an issue after construction fabric and gravel have been laid on the area. Some or all of the following control practices will be employed to reduce wind-driven erosion:

- Limit the speed of onsite vehicles and equipment.
- Apply water to areas of disturbed or loose soil, or an approved hydraulically applied polymer.
- Place protective covers over spoil piles, as necessary.
- All spoil piles will have fiber roll protection at the toe of the stockpile, or equivalent.
- Apply dust suppressants to spoil piles lasting longer than 21 days.
- Cleaning measures for road and parking areas will be employed when necessary.

3.1.2.1.2 Engineered Structures

Engineered structures may be used to support, reinforce, or protect the diverted swales. These structures will only be used in areas where biotechnical alternatives will not be effective. In general, engineered structures will be applied in situations where site use makes it impractical to use non-structural alternatives. Engineered structures may include structures designed to protect drainage ditches and canals.

3.1.2.2 Revegetation

The primary objective of revegetation is the stabilization of soils by the establishment of vegetative cover and root structures. Revegetation dissipates the forces of erosion by reducing the intensity of falling rain and presenting obstacles to reduce the rate of surface runoff. Revegetation typically enhances and protects wildlife habitat. Revegetation provides long-term, relatively low cost and maintenance-free erosion protection. Revegetation is not a suitable solution for stopping large scale mass wasting, because the vegetative cover will move downslope with the mass of soil/rock.

Native vegetation will be used whenever possible during revegetation. Local native plants are genetically adapted to specific local climates and microclimates, resulting in better establishment and longevity of those plants. Using native species also provides habitat for native wildlife species. Indiscriminate use of non-native species could potentially disrupt and compromise native habitat.

During area preparation the diverted swales will be revegetated with native annual grasses and forbs to prevent erosion. The swales would be constructed during the summer months when these ephemeral systems are dry. Vegetation and other erosion control devices will need to be established prior to the arrival of seasonal rain events. The diverted swales will connect with a continguous diversion north of Clay East Road by way of a new culvert crossing.

The laydown area will be revegetated following completion of the CPP facility. Salvaged topsoil will be replaced following recontouring and the removal of gravel and construction fabric. Prior to seedbed preparation, the soil may be tested to determine existing nutrient conditions. Organic soil supplements such as chemical fertilizer, humus, or manure will be applied when necessary. The disturbed area will be revegetated with the native annual grasses and forbs presented in Table BR22-1.

TABLE BR22-1
Erosion Control and Restoration Seed Mix and Application Rate (lbs./acre).

Scientific Name	Common Name	Seed Application
Bromus carinatus	California Native Brome	9
Melica californica	California Melicgrass	4.5
Elymus glaucus	Blue Wild Rye	6
Eschscholzia californica	California Golden Poppy	1
Lupinus succulintus	Arroyo Lupine	1.5
Vulpia myuros	Zorro Fescue	7
Total		29

A range of seedbed preparation methods shall be used after final grading is complete. The seedbed preparation method used for the site shall depend on various factors such as size, slope, potential for erosion, and landowner requirements.

To reduce wind-driven erosion and erosion from surface runoff, sloped and other critical areas will be mulched after seeding. Mulch materials will consist of 100 percent wood mulch with tacifier. The mulch will be applied at a rate of approximately 1,500 pounds up to 2,500 pounds per acre, depending on slope. The mulch will be hydraulically applied over the seeded area. This will be a two-step process, with seed application first, and the mulch/ tacifier application final.

3.1.3 Non-Stormwater Management

Control measures will be used to limit the amount of non-storm water discharges. Appropriate measures will be taken to ensure construction-use water does not discharge into the swales. Portable sanitary facilities will be provided for construction workers and placed away from any possible contamination of drainage swales and storm water inlets. The water used on the laydown area will be limited to the quantities necessary for sufficient dust suppression and soil compaction.

3.2 Laydown Utilization

3.2.1 Stormwater Management

Erosion control measures such as silt fencing and haybales will remain in place during used of the laydown area. The long-term effectiveness of the erosion control features will be the subject of regular site monitoring (see monitoring sections below).

3.2.2 Stormwater Management Monitoring

The laydown area will be inspected pursuant to the conditions of the National Pollutant Discharge Elimination System (NPDES) stormwater discharge permit, outlined in the Storm Water Pollution Prevention Plan (SWPPP). Concerns will include evidence of, or the potential for, pollutants entering the drainage system. Inspections will be conducted at least once every week for the duration of the construction, and at 24 hours prior to periods of

significant rainfall, during significant rainfall events and 24 hours after such events (greater than 1.0 inch/week).

3.2.3 Erosion Control Monitoring

The inspection and maintenance schedule will be outlined in the SWPPP, with appropriate inspection, maintenance, and monitoring forms available during construction to ensure that erosion control requirements are being met. Initially, the laydown area will be monitored for erosion control effectiveness on a daily basis. Monitoring frequency may be reduced if daily monitoring is determined to be excessive. Additional inspections will occur following significant events, such as large rain events or spills. This schedule will be continued until the area is adequately stabilized. An *Erosion Control/Storm Inspection Log* will document field inspections and any maintenance and/or repair work. Where significant erosion has occurred, information on intensity and type of erosion shall be recorded. These areas will be repaired immediately. The log shall also note problem areas that cannot be immediately repaired due to saturated soils or limited access. In such cases, an estimated repair schedule will be included in the log.

3.2.4 Monitoring Effectiveness of Revegetation

Revegetation will be monitored following restoration of the laydown area. Inspections will identify areas where revegetation has been unsuccessful and where revegetation activities should be initiated. Appropriate remedial actions will then be implemented. Potential actions will include additional seeding, installation of irrigation systems, regrading, or installation of engineered structures to control surface-runoff. Corrective actions will be implemented as soon as feasible, but no later than the start of the next rainy season. Revegetation will be considered successful when the restored area is equal to 70 percent of the original vegetation cover on the site prior to construction of the laydown area.

Vegetation monitoring will be conducted as part of routine overall project maintenance activities, and after major rain events. Re-seeded areas will be monitored annually for at least 2 years following seeding. When needed, additional remedial measures will be implemented as part of the overall project maintenance program.

SECTION 4

References

California Storm Water Best Management Practice Handbook: Construction Activity (March, 1993)

Salix Applied Earthcare 2002 (John McLaughlin)

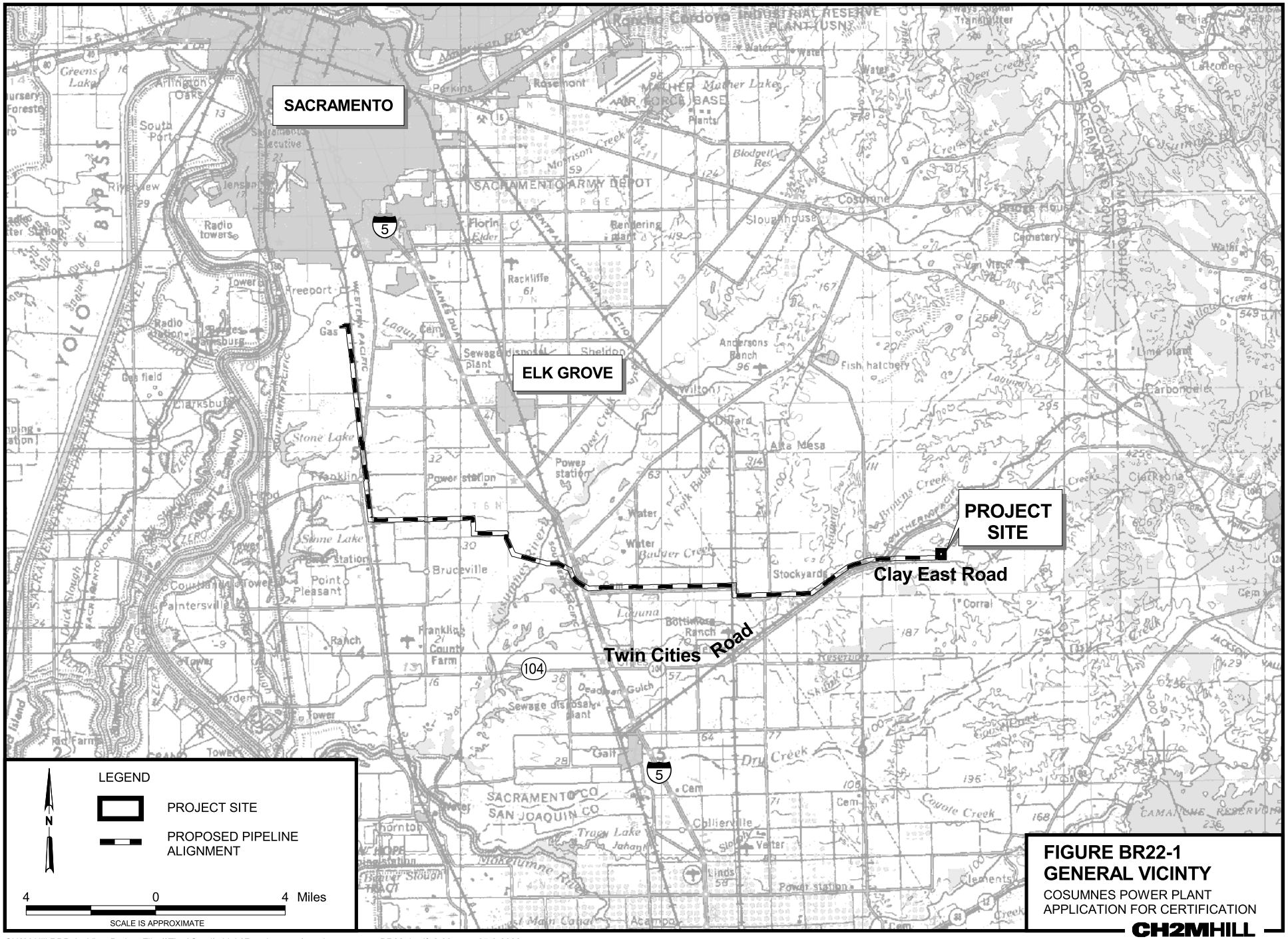


FIGURE BR22-1
GENERAL VICINITY
COSUMNES POWER PLANT
APPLICATION FOR CERTIFICATION
CH2MHILL

GENERAL NOTES

1. CREEK DIVERSION, DETENTION POND AND STABILIZED CONSTUCTION ENTRANCES SHALL BE CONSTRUCTED PRIOR TO THE COMMENCEMENT OF GRADING ACTIVITIES AND SHALL BE MAINTAINED THROUGHOUT THE COURSE OF THE PROJECT.

   CREEK DIVERSION AND DETENTION POND EMBANKMENTS SHALL BE SEEDED. ALL OTHER EMBANKMENTS SHALL BE PROTECTED DURING CONSTRUCTION WITH FILTER FABRIC ON SLOPE.

3. DETENTION POND SHALL BE USED AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION.

4. STABILIZED CONSTRUCTION ENTRANCES SHALL BE A MINIMUM OF 20 FEET WIDE, 50 FEET LONG AND SHALL CONSIST OF A 6-INCH THICK MINIMUM LAYER OF 2-INCH ANGULAR CRUSHED AGGREGATE COMPACTED IN PLACE, UNDERLAIN WITH A GEOTEXTILE FILTER FABRIC.

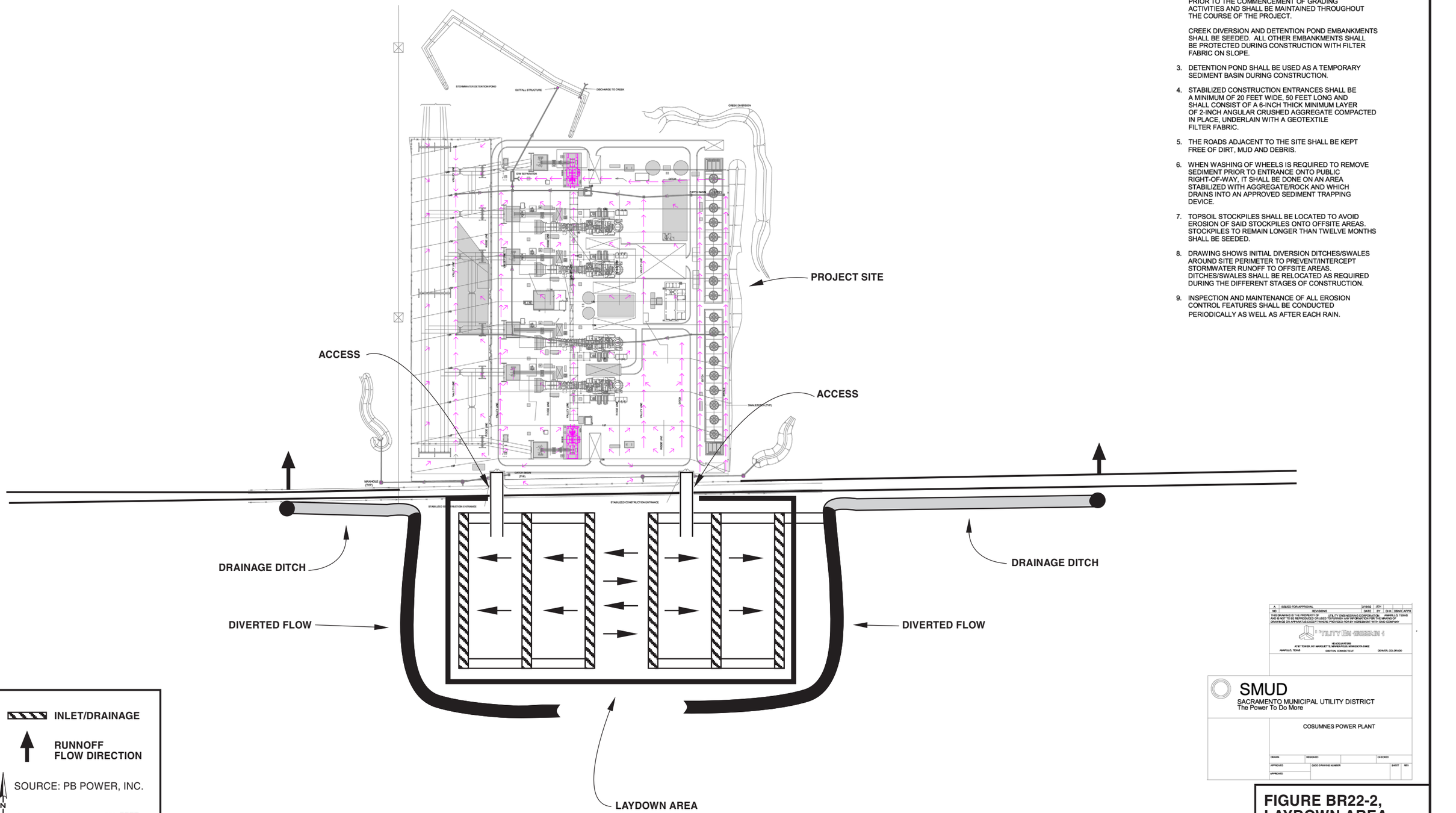
5. THE ROADS ADJACENT TO THE SITE SHALL BE KEPT FREE OF DIRT, MUD AND DEBRIS.

6. WHEN WASHING OF WHEELS IS REQUIRED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE/ROCK AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

7. TOPSOIL STOCKPILES SHALL BE LOCATED TO AVOID EROSION OF SAID STOCKPILES ONTO OFFSITE AREAS. STOCKPILES TO REMAIN LONGER THAN TWELVE MONTHS SHALL BE SEEDED.

8. DRAWING SHOWS INITIAL DIVERSION DITCHES/SWALES AROUND SITE PERIMETER TO PREVENT/INTERCEPT STORMWATER RUNOFF TO OFFSITE AREAS. DITCHES/SWALES SHALL BE RELOCATED AS REQUIRED DURING THE DIFFERENT STAGES OF CONSTRUCTION.

9. INSPECTION AND MAINTENANCE OF ALL EROSION CONTROL FEATURES SHALL BE CONDUCTED PERIODICALLY AS WELL AS AFTER EACH RAIN.



D062001002RDD_301 (5/3/02)

NO	REVISIONS	DATE	BY	CHK	DRWR	APPR
A	ISSUED FOR APPROVAL	2/19/02	JEH			

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SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
The Power To Do More

COSUMNES POWER PLANT

DRAWN	DESIGNED		CHECKED	
APPROVED	CADD DRAWING NUMBER		SHEET	REV
APPROVED				

FIGURE BR22-2,
LAYDOWN AREA
DRAINAGE PLAN
COSUMNES POWER PLANT

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